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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,728	03/04/2005	Alan D. Harrison	042513.013US	9925

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ATLANTA, GA 30309-3592

EXAMINER

ALLEN, CAMERON J

ART UNIT	PAPER NUMBER
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1709

MAIL DATE	DELIVERY MODE
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07/30/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/526,728

Applicant(s)

HARRISON ET AL.

Examiner

Cameron J. Allen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 March 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>03/04/2005</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6-8, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Applegate et. al. (US 4,988,444).

Regarding claim 1, Applegate teaches a process for treating a reverse osmosis membrane with a biocide to kill bacteria on or in the vicinity of said membrane (column 2 line 47) comprising contacting said reverse osmosis membrane with an oxidizing halogen biocide (column 4 line 18-19) in combined form which slowly releases said halogen in sufficient amount to disinfect said membrane and to kill said bacteria and thereby eliminate or prevent biofilm on said membrane. (Column 5 line 5) The examiner interprets the killing of 99.99% of microorganisms to be a sufficient amount and slow enough to kill microorganisms.

Regarding claim 2, Applegate teaches the process according to claim 1 wherein the halogen biocide is a combination of an oxidizing biocide substance that contains a halogen in the +1 oxidation state and a nitrogen containing compound which contains at

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least one nitrogen atom in the imide or amide form, such that the halogen loosely binds with the nitrogen thereby forming combined halogen (column 4 line 14 and 18). The examiner interprets a halogen to denote fluorine, chlorine, bromine, or iodine. The examiner interprets imide to be a compound derived from ammonia and containing the bivalent NH group combined with a bivalent acid group or two monovalent acid groups.

Regarding claim 3, Applegate teaches the process according to claim 1 wherein the oxidizing biocide is a halogen containing biocide that includes nitrogen in the imide or amide form. (Column 4 line 17)

Regarding claim 6, Applegate teaches a process for treating water with a reverse osmosis membrane for desalination of said water, comprising contacting said water upstream from said membrane with an oxidizing halogen biocide to kill bacteria on or in the vicinity of said membrane, wherein said biocide contains an oxidizing halogen in combined form which slowly releases said halogen in sufficient amount to disinfect said membrane and to kill said bacteria and thereby eliminate or prevent a biofilm on said membrane. (Column 3 line 40-45)

Regarding claim 7, Applegate teaches the process according to claim 6 wherein the halogen biocide is a combination of an oxidizing biocide substance that contains a halogen in the +1 oxidation state and a nitrogen containing compound that contains at least one nitrogen atom in the imide or amide form, such that the halogen loosely binds with the nitrogen thereby forming combined halogen. (Column 4 line 33)

Regarding claim 8, Applegate teaches the process according to claim 6 wherein the oxidizing biocide is a halogen containing biocide that includes nitrogen in the imide

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or amide form. (Column 4 line 14 and 18)

Regarding claim 17, Applegate teaches a process for treating a reverse osmosis membrane made of polyamide with a biocide to kill bacteria on said membrane comprising contacting said reverse osmosis membrane with a stream of water containing an oxidizing biocide that contains a halogen in combined form which slowly releases said halogen in sufficient amount to disinfect said membrane and to kill said bacteria and thereby eliminate or prevent a biofilm on said membrane. (Column 3 line 40-45)

3. Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by Kuhner et. Al. (US 6,858,581).

Regarding claim 1, Kuhner teaches a process for treating a reverse osmosis membrane with a biocide to kill bacteria on or in the vicinity of said membrane (column 17 line 19-20) comprising contacting said reverse osmosis membrane with an oxidizing halogen biocide (column 17 line 19-20)(column 20 line 38) in combined form which slowly releases said halogen in sufficient amount to disinfect said membrane and to kill said bacteria and thereby eliminate or prevent biofilm on said membrane. (Column 17 line 14-16)

Regarding claim 2, Kuhner teaches the process according to claim 1 wherein the halogen biocide is a combination of an oxidizing biocide substance that contains a halogen in the +1 oxidation state and a nitrogen containing compound which contains at least one nitrogen atom in the imide or amide form, such that the halogen loosely binds with the nitrogen thereby forming combined halogen (column 20 line 38)(column 19 line

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20)(column 21 line 11). The examiner interprets a halogen to denote fluorine, chlorine, bromine, or iodine. The examiner interprets imide to be a compound derived from ammonia and containing the bivalent NH group combined with a bivalent acid group or two monovalent acid groups.

Regarding claim 3, Kuhner teaches the process according to claim 1 wherein the oxidizing biocide is a halogen containing biocide that includes nitrogen in the imide or amide form. (Column 20 line 39) The examiner interprets Br in the natural or elemental state to be oxidizing.

Regarding claim 4, Kuhner teaches the process according to claim 2 wherein the halogen is bromine. (Column 20 line 39)

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 5, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applegate et. al. as applied to claims 1 and 6 above, and further in view of Del Corral et al.

8. Regarding claim 5, Applegate teaches the process according to claim 1 but does not teach wherein the biocide is bromochlorodi-methylhydantoin. Del Corral does teach the biocide is bromochlorodi-methylhydantoin. (Column 11 line 22) It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Applegate with Del Corral because they both teach of treating biofilm. (Column 1 line 37 Del Corral)

Regarding claim 10, Applegate teaches the process according to claim 6 but does not teach wherein the biocide is bromochlorodi-methylhydantoin. Del Corral does teach the biocide is bromochlorodi-methylhydantoin. (Column 11 line 22) It would have been obvious to one of ordinary skill in the art at the time the invention was made

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to modify Applegate with Del Corral because they both teach of treating biofilm. It would be obvious to change the delivery method to another method known in the art.

Regarding claim 11, Applegate teaches the process according to claim 6 but does not teach further comprising providing said biocide in the form of a solid compact, dissolving said solid compact to form a concentrated solution of said biocide and feeding said concentrated solution of the biocide into the water. Del Corral does teach providing said biocide in the form of a solid compact, dissolving said solid compact to form a concentrated solution of said biocide and feeding said concentrated solution of the biocide into the water. (Column 16 line 29) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Applegate with Del Corral because they both teach of treating biofilm. It would be obvious to change the delivery method to another method known in the art.

9. Claims 4, 9, and 12-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applegate.

Regarding claim 4, Applegate teaches the process according to claim 2 but does not teach wherein the halogen is bromine. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any halogen such as bromine because it is known in the art that halogens are used in this manner.

Regarding claim 9, Applegate teaches the process according to claim 6 but does not teach wherein the halogen is bromine. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any halogen such as bromine because it is known in the art that halogens are used in this manner.

Regarding claim 12, Applegate teaches the process according to claim 11 but does not teach wherein the concentrated solution is fed into the water at such a rate so as to provide from 0.05 to 4 ppm total halogen at the point of contact with the membrane. It would have been obvious to one of ordinary skill in the art at the time the invention was made to feed wherein the concentrated solution is fed into the water at such a rate so as to provide from 0.05 to 4 ppm total halogen at the point of contact with the membrane, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 13, Applegate teaches the process for treating water with a reverse osmosis membrane according to claim 6 but does not teach wherein a suspension or solution containing said biocide is introduced into a stream of water at such a rate so as to provide from 0.05 to 4 ppm total halogen on said membrane to kill said bacteria and thereby eliminate or prevent a biofilm on said membrane. It would have been obvious to one of ordinary skill in the art at the time the invention was made to feed wherein the concentrated solution is fed into the water at such a rate so as to provide from 0.05 to 4 ppm total halogen at the point of contact with the membrane, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art.

Regarding claim 14, Applegate teaches the process according to claim 13 but does not teach wherein the biocide is a halogen-containing compound that includes nitrogen in the imide or amide form. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any halogen such as bromine because it is

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know in the art that halogens are used in this manner.

Regarding claim 15, Applegate teaches the process according to claim 14 but does not teach wherein the halogen is bromine. It would have been obvious to one of ordinary skill in the art at the time of the invention to use any halogen such as bromine because it is know in the art that halogens are used in this manner.

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applegate as applied to claim 13 above, and further in view of Del Corral et al.

Regarding claim 16, Applegate teaches the process according to claim 13 but does not teach wherein the biocide is bromochlorodi-methylhydantoin. Del Corral does teach wherein the biocide is bromochlorodi-methylhydantoin. (Column 11 line 23) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Applegate with Del Corral because they both teach of treating biofilm

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cameron J. Allen whose telephone number is 571-2703164. The examiner can normally be reached on Mon-Fri 8-5 alternate Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

CJA


WALTER D. GRIFFIN
SUPERVISORY PATENT EXAMINER